CLAIMS

What is claimed is:

1. A three-dimensionally adjustable body set type speaker unit for mounting directly on a user's body or on an apparatus having a varying radius, comprising: a mounting member having a speaker hold member, a universal joint portion and a rotatable stay coupled thereon for detachably mounting said unit on a user's body or a mounting apparatus, and a directional speaker positioned on said rotatable stay wherein said speaker may be adjusted three-dimensionally about said stay to a predetermined distance from a user's ear, wherein said speaker hold member securely positions said directional speaker at said predetermined distance away from a user's ear to form an air gap having a predetermined gap space as determined between said ear and a speaker face of said speaker such that said speaker face is not in contact with said user's ear, and said speaker face is relationally adjustable three-dimensionally in a predetermined range to said predetermined distance, wherein when said speaker unit is in use and emanating sound, said speaker face is optimally positioned to suppress sound leakage to an external environment while permitting external sounds from said external environment to be available to a user.

2. The unit of claim 1 wherein the face is positioned in relation to the ear opening such that a ratio (E_r) of the sound energy radiated from said face to the ear opening (E_a) in relation to the total energy radiated from the face (E_t) is of a value sufficiently approximating one or greater.

3. The unit of claim 2, wherein said speaker hold member is securable to said mounting member.

4. The unit of claim 2, wherein said speaker hold member provides for a user to adjustably

and dimensionally position said directional speaker at a predetermined distance as between said face and said ear.

5. The unit of claim 2, wherein said speaker outputs a received audio signal received through an electronic device.

6.The unit of claim 5, wherein said audio signal is received by conductive or radiative means.

7. The unit of claim 2, further comprising a bone-conduction type speaker, for transmitting a sound of a frequency of a predetermined value or less to said user by placing said bone-conduction type speaker in contact with user.

8. The unit of claim 4, further comprising a bone-conduction type speaker, for transmitting a sound of a frequency of a predetermined value or less to said user by placing said bone-conduction type speaker in contact with user.

9. The unit of claim 8, further comprising an urging member for generating an urging force for placing said bone-conduction type speaker in contact with user.

10.The unit of claim 2, further comprising a microphone.

11.The unit of claim 8, further comprising a microphone.

12.The unit of claim 2, wherein said directional speaker comprises at least one directional speaker for a user.

13.The unit of claim 12, wherein said directional speaker comprises two directional speakers.

14. A three-dimensionally adjustable set type speaker set for mounting directly on a user's body or on an apparatus having a varying radius, comprising:
a mounting member having a speaker hold member, a universal joint portion and a rotatable stay coupled thereon for detachably mounting said unit on a user's body or a mounting apparatus, and at least one directional speaker positioned on said rotatable stay and three-dimensionally rotatable about said stay at a predetermined distance from a user's ear, having a speaker face for assembly with said mounting member wherein each of said speakers is adjustably positionable such that each of the faces may be securely positioned at a predetermined distance away from a user's ear by a speaker hold member when mounted, wherein said speaker hold member, when assembled, securely positions each of said at least one directional speakers at said predetermined distance away from a user's ear to form an air gap having a predetermined gap space as determined as between said ear and said speaker face, wherein said speaker is capable of outputting a received audio signal through via said speaker face,
and said speaker face is relationally adjustable three-dimensionally in a predetermined range to said predetermined distance, wherein when said speaker unit is in use and emanating sound, said speaker face is optimally positioned to suppress sound leakage to an external environment while permitting external sounds from said external environment to be available to a user.

15. The set of claim 14, further comprising a bone-conduction type speaker for assembly with said mounting member.

16. The assembly of a mounting member detachably mountable on a body portion of a user or on an apparatus having a varying radius, and at least one directional speaker having a speaker face assembled with said mounting member, wherein each of said speakers is three-dimensionally positionable in a predetermined range about a rotatable stay such that each of the faces may be securely positioned at a predetermined distance away from a user's ear by a speaker hold member, a universal joint portion and said rotatable stay coupled thereon when mounted, wherein said speaker hold member,

assembled to said mounting member, securely positions said directional speaker at said predetermined distance away from a user's ear to form an air gap having a distance as between said ear and said face, wherein said speaker is capable of outputting a received audio signal through via said face.

17. The assembled set of claim 16, further comprising a bone-conduction type speaker, for transmitting a sound of a frequency of a predetermined value or less to said user by placing said bone-conduction type speaker in contact with user.

18. The unit of claim 12 further comprising a microphone.

19. The unit of claim 18 further comprising at least a plurality of speaker faces.

20.The set of claim 17, wherein when mounted on a use, the face is positioned in relation to the ear opening such that a ratio (E_r) of the sound energy radiated from said face to the ear opening (E_a) in relation to the total energy radiated from the face (E_t) is of a value sufficiently approximating one or greater.